Rider Institute Online

Physics Fall 2025

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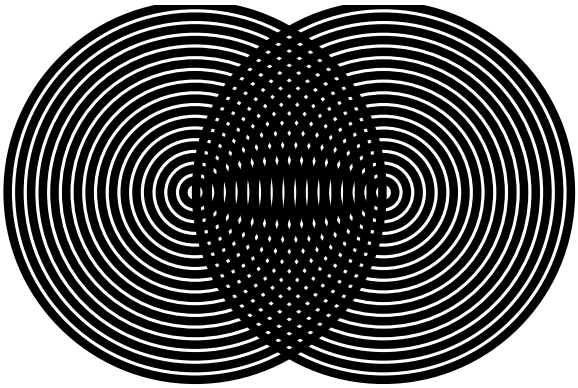
Website: riderinstitute.org



This online course (for students in upper elementary through high school) covers physics from Newton's laws to aerospace engineering and beyond. No prior knowledge is required. Supplementary reading and simple home experiments are recommended (but not required) each week—see the next page for more information.

The course is conducted via Google Meet on Wednesdays 8:00-9:00 p.m. Eastern (5:00-6:00 p.m. Pacific).

You can pay for individual blocks of 8 weeks (see below) or $384 per household for the entire fall course (Parts I and II). To register, please pay in advance by credit card (riderinstitute.org/donate) or by check (made payable to "Rider Institute Inc." and mailed to: Todd Rider, 5 Green Needles Road, Littleton, MA 01460) and also send an email (thor@riderinstitute.org). Payments are nonrefundable.

Dr. Rider has over 35 years of experience in science education and research:
riderinstitute.org/education riderinstitute.org/about

Physics Part I ($192 per household for 8 weeks)

Sept. 3	Motion in 1 dimension
Sept. 10	Motion in 2 or 3 dimensions
Sept. 17	Newton's laws 1
Sept. 24	Newton's laws 2
Oct. 1	Work and energy 1
Oct. 8	Work and energy 2
Oct. 15	Momentum and collisions
Oct. 22	Rotational motion

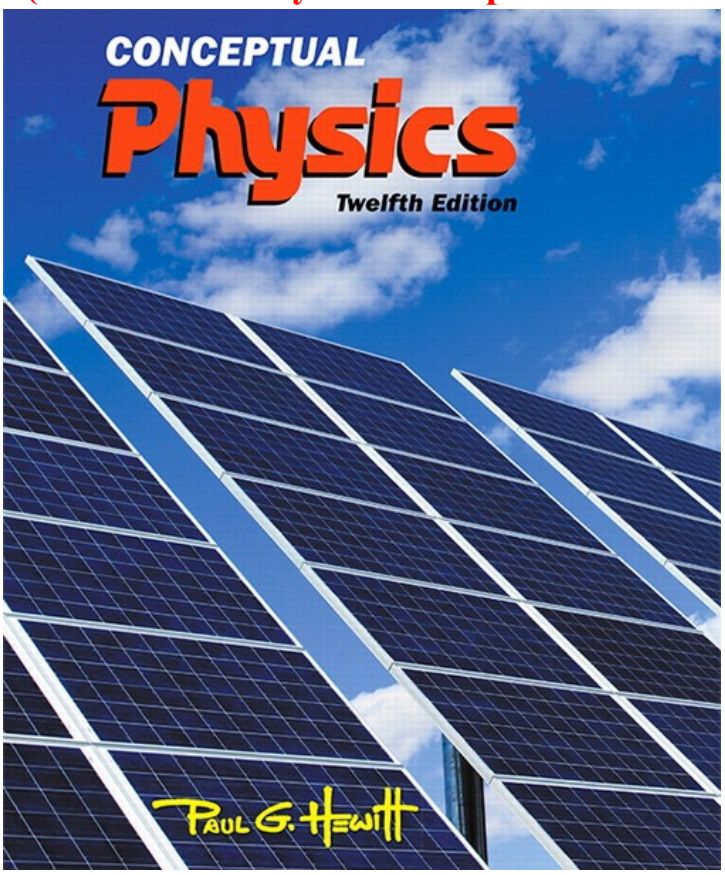
Physics Part II ($192 per household for 8 weeks)

Oct. 29	Gravity and orbits
Nov. 5	Equilibrium and elasticity
Nov. 12	Fluids and aerodynamics
Nov. 19	Thermodynamics 1
Nov. 26	Thermodynamics 2
Dec. 3	Periodic motion
Dec. 10	Waves 1
Dec. 17	Waves 2

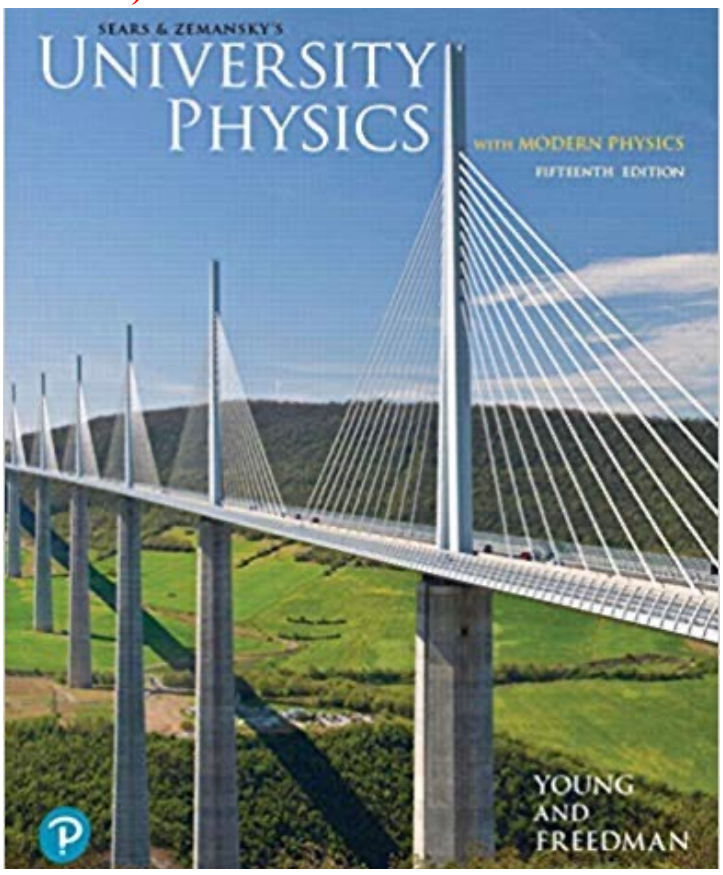
If there is enough interest, I will offer more physics during spring 2026, covering topics such as:

- Electric fields 1
- Electric fields 2
- Electric circuits
- Magnetic fields 1
- Magnetic fields 2
- Electromagnetic waves
- Optics 1
- Optics 2
- Special relativity
- General relativity
- Nonrelativistic quantum physics 1
- Nonrelativistic quantum physics 2
- Solid state physics
- Relativistic quantum physics
- Nuclear physics 1
- Nuclear physics 2

It is recommended (though not required) that students buy a physics textbook for supplementary readings during each week. Students can use either Paul Hewitt's *Conceptual Physics* or Young & Freedman's *University Physics with Modern Physics* (make sure it says that last part—some versions do not):



OR



For less advanced students
12th ed. (2014), or
11th ed. (2009), or
10th ed. (2005), or
9th ed. (2001), etc.

For more advanced students
15th ed. (2019), or
14th ed. (2015), or
13th ed. (2011), or
12th ed. (2007), etc.

New textbooks are insanely expensive, but more affordable used copies are available from reputable dealers at amazon.com, abebooks.com, etc. You can also save money (without losing much scientific content) by buying an edition that is recent but not the very latest. Don't pay for online access codes (those are just an expensive gimmick) and don't rent a book (a good printed textbook that you can keep is an invaluable resource that can be useful in later courses). If you would like to prepare for the AP exam, you should also acquire a book of practice tests, such as *Princeton Review AP Physics C*.

Each week I will suggest simple lab activities that students can do at home with adult supervision, using common household items or supplies from online dealers. The website www.homesciencetools.com sells science kits, and Thames & Kosmos science kits are also available from various dealers online. The parents or legal guardians of students assume all responsibility and liability for supervising any student lab activities and for ensuring that all applicable safety procedures and instructions are followed. The Rider Institute and Todd H. Rider assume no responsibility or liability for any lab activities.